

## **What is claimed is:**

**[Claim 1]** 1. A method for controlling long seeking operation in an optical disc drive, the optical disc drive comprising a sled actuator, a pickup head installed on the sled actuator for accessing data on an optical disc, and a controller for controlling the sled actuator to move together with the pickup head, the method comprising:

- (a) receiving remaining tracks information indicating a number of tracks remained to be crossed by the sled actuator and/or the pickup head;
- (b) receiving velocity information indicating a velocity of the sled actuator and/or the pickup head;
- (c) receiving acceleration information indicating an acceleration of the sled actuator and/or the pickup head;
- (d) driving the sled actuator to move according to the remaining tracks information, the velocity information, and the acceleration information.

**[Claim 2]** 2. The method of claim 1 wherein in step (d), the controller outputs a driving voltage to control the movement of the sled actuator and/or the pickup head; the driving voltage is a function of the velocity and the acceleration of the sled actuator and/or the pickup head.

**[Claim 3]** The method of claim 2 wherein in the driving voltage, the component influenced by the velocity of the sled actuator and/or the pickup head is the product of the velocity and a first multiplier.

**[Claim 4]** 4. The method of claim 3 wherein the first multiplier is a variable determined by the number of tracks remained to be crossed and the velocity of the sled actuator and/or the pickup head.

**[Claim 5]** The method of claim 3 further comprising:

(e) decreasing the first multiplier with the controller when the number of tracks remained to be crossed decreases.

**[Claim 6]** 6. The method of claim 3 further comprising:

(f) decreasing the first multiplier with the controller when the velocity of the sled actuator and/or the pickup head increases.

**[Claim 7]** 7. The method of claim 2 wherein in the driving voltage, the component influenced by the acceleration of the sled actuator and/or the pickup head is the product of the acceleration and a second multiplier.

**[Claim 8]** 8. The method of claim 7 wherein the second multiplier is a variable determined by the number of tracks remained to be crossed and the velocity of the sled actuator and/or the pickup head.

**[Claim 9]** 9. The method of claim 7 further comprising:

(g) increasing the second multiplier by the controller when the number of tracks remained to be crossed decreases.

**[Claim 10]** 10. The method of claim 7 further comprising:

(h) decreasing the second multiplier by the controller when the velocity of the sled actuator and/or the pickup head increases.

**[Claim 11]** 11. The method of claim 1 further comprising:

outputting an initial driving voltage to the sled actuator with the controller according to target tracks in order to control an initial movement of the pickup head.

**[Claim 12]** 12. A long seeking control system in an optical disc drive, the optical disc drive comprising a sled actuator, a pickup head installed on the sled actuator for accessing data on an optical disc, and a controller for controlling the movement of the sled actuator together with the pickup head, the long seeking control system comprising:

a track sensor coupled to the controller for providing remaining tracks information indicating a number of tracks remained to be crossed by the sled actuator and/or the pickup head;

a velocity sensor coupled to the controller for providing velocity information indicating a velocity of the sled actuator and/or the pickup head; and

an acceleration sensor coupled to the controller for providing acceleration information indicating an acceleration of the sled actuator and/or the pickup head;

wherein the controller controls the movement of the sled actuator and/or the pickup head according to the remaining tracks information, the velocity information, and the acceleration information.

**[Claim 13]** 13. The system of claim 12 wherein the controller outputs a driving voltage to control the movement of the sled actuator and/or the pickup head; the driving voltage is a function of the velocity and the acceleration of the sled actuator and/or the pickup head.

**[Claim 14]** 14. The system of claim 13 wherein in the driving voltage, the component influenced by the velocity of the sled actuator and/or the pickup head is the product of the velocity and a first multiplier, and the first multiplier is a variable determined by the number of tracks remained to be crossed and the velocity of the sled actuator and/or the pickup head.

**[Claim 15]** 15. The system of claim 14 wherein the controller decreases the first multiplier when the number of tracks remained to be crossed decreases.

**[Claim 16]** 16. The system of claim 14 wherein the controller decreases the first multiplier when the velocity of the sled actuator and/or the pickup head increases.

**[Claim 17]** 17. The system of claim 13 wherein in the driving voltage, the component influenced by the acceleration of the sled actuator and/or the pickup head is the product of the acceleration and a second multiplier, and the second multiplier is a variable determined by the number of tracks remained to be crossed and the velocity of the sled actuator and/or the pickup head.

**[Claim 18]** 18. The system of claim 17 wherein the controller increases the second multiplier when the number of tracks remained to be crossed decreases.

**[Claim 19]** 19. The system of claim 17 wherein the controller decreases the second multiplier when the velocity of the sled actuator and/or the pickup head increases.

**[Claim 20]** 20. The system of claim 12 wherein the controller outputs an initial driving voltage to the sled actuator according to target tracks in order to control an initial movement of the pickup head.